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nursery, and in the accumulation of herbarium, museum and library material. Through a cooperative agreement entered into with Columbia University, the herbarium and botanical library of the University will be deposited with the Garden, and most of the research and graduate work of the University in botany will be carried on in the Museum Building.

The endowment fund has been materially increased, and about 430 persons have become annual members of the Garden, contributing ten dollars a year each to its support. The publication of a Bulletin has been commenced by the issue, in April, of the first number of Volume I.

N. L. BRITTON.

NEW YORK BOTANICAL GARDEN.

PHILIP LUTLEY SCLATER.

PHILIP LUTLEY SCLATER, Secretary of the Zoological Society of London, is one of the best known of zoologists. Few men now living have contributed so much as he to systematic ornithology, and none have done so much in the identification and description of new forms from the Western Continent.

His work has been largely in connection with the luxuriant fauna of Neotropical America, little known at the time when he began his researches. Nearly every year since he began work, in 1853, his correspondents in tropical America have laid at his feet new wealth in the form of collections from regions hitherto unexplored.

He has characterized 1,067 new species (245 in collaboration with Osbert Salvin) and 135 new genera (25 with Salvin), as well as two new families of American birds.

Mr. Robert Ridgway writes:

"The name of Sclater is so much a part of Neotropical ornithology that any knowledge of the latter without equal familiarity with the former would be impossible. Certainly no other name occurs so frequently nor ranks more highly in the literature

pertaining to the birds of tropical America. Covering a period of more than forty years of unceasing activity, chiefly devoted to this, his favorite geographical field, the importance of Mr. Sclater's contributions to the ornithology of the Neotropical region can hardly be over-estimated. Other ornithologists, it is true, have rendered important services so far as portions of America are concerned, as Salvin for Mexico and Central America, and Lawrence for the same area and the West Indies, while the former has been associated with Sclater in the preparation of various monographic papers, the 'Nomenclator Avium Neotropicalium' and other works; but only Sclater has covered impartially the Neotropical region as a whole.

"Mr. Sclater's treatment of ornithological subjects is concise and conservative—more so, frequently, than some of us would wish it to be. Some of us on this side of the Atlantic differ with him in nomenclatural matters and regarding the status and discrimination of subspecies or geographical races; but in these respects his methods are those of a particular school, which we are pleased to call the 'old,' and which few, if any, of his countrymen have forsaken. We fondly hope, however, that the conservatism of our English brethren may sometime yield to the sound principles upon which the so-called 'American' schools have based their 'innovations,' and the complete harmony of methods between ornithologists of the two countries, so much to be desired, be thereby established.

"Sclater," writes Merriam, "is a good type of the industrious, systematic naturalist. His official and personal energy brought him a wealth of new material. This he described in an endless series of papers on new species and new genera. Then, as additional specimens and additional species came in, he promptly published more comprehensive treatises in the form of synopses of genera or larger assemblages. And later, when still ampler material cast new light on the subject, he, in numerous instances, revised the same groups over again, correcting early errors, adding new species and bringing the history of the groups down to date. These synopses and monographic revisions are the most important and useful of Sclater's contributions to science. Their number is amazing. In addition to all these, his 'Nomenclator Avium Neotropicalium' and 'Argentine Ornithology' have come to be indispensable to the student of South American birds. And finally, as a fitting climax to this remarkable series, he has lived to erect his own monument in the admirable volumes he has contributed to the British Museum's 'Catalogue of Birds.'

"He has written many important papers concerning mammals, illustrated by colored plates of high

merit. Among the more useful of these are articles on the deer, rhinoceroses and African monkeys. He is now publishing, in connection with Mr. Oldfield Thomas, a magnificently illustrated work, entitled 'The Book of Antelopes,' the second volume of which is already well advanced."

Remarkable as have been his industry and his accuracy in diagnosis and description, his energy and skill as an organizer have been equally noteworthy. But for him many regions now well known to the ornithologist would doubtless still remain unexplored.

His labors have also resulted in extensive additions to our knowledge of the geographical distribution of vertebrates. Not only has he worked out many local faunas, but his generalizations upon the distribution of life and the division of the globe into zoogeographical regions have had great influence. He was one of the pioneers in this field of investigation, and his writings upon the subject have always been full of suggestion and have stimulated many others to engage in similar inquiry. His views as to the geographical distribution of birds are undoubtedly more widely accepted throughout the world than those of any other authority, and though, with increasing knowledge, modifications in the scheme proposed by him long ago will doubtless become more and more numerous, his studies of geographical distribution will always be considered as of fundamental importance, and the terms which he suggested for the principal divisions of the earth's surface will doubtless remain in ordinary use.

For more than thirty years the chief executive officer of the most wealthy and vigorous zoological society in the world, his influence upon the progress of natural history exploration has been very great, and his relations with American naturalists have always been cordial and cooperative.

Notwithstanding the great bulk of his technical publications, he has for four decades been prominent in the social activities

of scientific London and a noteworthy figure in the midst of every important scientific gathering.

A complete analytical bibliography of his writings, including nearly 1,300 titles, will soon be published as one of the bulletins of the U. S. National Museum. This will make available to American naturalists all the results of the work of this eminent scholar, who has done for the ornithology of Central and South America what Nuttall, Wilson, Audubon, Baird, Ridgway, Allen, Merriam and their associates have done for that of the northern continent.

Philip Lutley Selater was born November 4, 1829, at 'Tangier Park,' in Hampshire, the residence of his father, William Lutley Selater, Esq., and his boyhood was passed chiefly at 'Hoddington House,' another estate in the same county belonging to his father, who died there in 1885 at the age of ninety-seven.

In beautiful Hampshire, not far from the home of Gilbert White at Selborne, he acquired, early in life, a love for outdoor life and a taste for the study of birds.

At the age of ten he was sent to a well-known school at Twyford, near Winchester. In 1842 he went to Winchester College, and in 1845 was elected scholar of Corpus Christi College, Oxford. Being at that time under sixteen years of age, he was not called into residence at the University until Easter, 1846.

At Oxford his attention was given principally to mathematics, though his spare time was occupied by the study of birds and of the excellent series of natural history books then in the Radcliffe Library.

Hugh E. Strickland, the well-known ornithologist, who was at that time resident in Oxford as reader in geology, became interested in young Selater and took him under his protection. At Strickland's chambers he met John Gould, shortly after his return from his great journey to Australia.

From Strickland he received his first instruction in scientific ornithology. He began his collection of bird skins at Oxford, making British skins for himself and buying foreign species at a shilling apiece, whenever he could get to London for a run among the bird shops.

After taking his degree he remained at his college in Oxford for two years, devoting his time principally to natural history. He also gave much attention to modern languages, studying with masters at home and always visiting the Continent in vacation time, and thus soon made himself familiar with French, German and Italian.

At this period of life he was often in Paris, where he made the acquaintance of the great ornithologist, Prince Charles Bonaparte, at whose house, until his death in 1858, he was a frequent visitor.

In 1851 he entered himself for the bar. In 1855 was admitted fellow of Corpus Christi College, and having in the previous June completed his legal education and been called to the bar by the Honorable Society of Lincoln's Inn, he went the Western Circuit for several years.

In 1856 he made his first journey across the Atlantic, in company with the Rev. George Hext, a fellow collegian. Leaving England in July, they went by New York up the Hudson to Saratoga, and there attended the meeting of the American Association for the Advancement of Science. After that they went to Niagara, and thence through the Great Lakes to Superior City, at the extreme end of Lake Superior. Here they engaged two Canadian 'voyageurs' and traveled on foot through the backwoods to the upper waters of St. Croix River. This they descended in a birch-bark canoe to the Mississippi. Mr. Sclater subsequently published an account of this journey in the third volume of 'Illustrated Travels.'

Returning by steamboat and railway to

Philadelphia, he spent a month in that city studying the splendid collection of birds belonging to the Academy of Natural Sciences, where he had the pleasure of the company of John Cassin, Joseph Leidy, John Le Conte and other then well-known members of that institution. He returned to England shortly before Christmas, 1856.

For some years after this he lived in London, practicing occasionally at the bar, but always at work on natural history. He was a constant attendant at the meetings of the Zoological Society, of which he was elected, in 1850, a life member, and in 1857 a member of the Council.

In January, 1859, he made a short excursion to Tunis and eastern Algeria, in company with Mr. E. C. Taylor and two other friends. They visited the breeding places of the vultures and kites in the interior and gathered many bird skins, returning to London at the end of March.

At this time Mr. D. W. Mitchell, secretary of the Zoological Society, was about to vacate his post in order to take charge of the newly instituted Jardin d'Acclimation in Paris. For this position Mr. Sclater was selected by Owen and Yarrell, then influential members of the Council. He was formally elected to it April 30, 1859, and has been reelected annually ever since.

He found it necessary to devote himself entirely for three years to the reorganization of the affairs of the Society. The 'Proceedings' and 'Transactions' were at that time several years in arrears—they were brought up to date; the 'Garden Guide,' which was out of print, was rewritten; the large staff at the gardens was rearranged and divided into departments under the superintendent, and various other reforms were introduced.

For thirty-five years his life has been almost entirely spent in work connected with natural history.

In 1874, when his brother accepted office

in Mr. Disraeli's administration as President of the Local Government Board, Mr. Sclater became his private secretary, a position which he occupied for two years. But when subsequently offered a place in the civil service he declined it, because he could not make up his mind to give up his dearly loved work in natural history.

His most engrossing duties have been in connection with the Zoological Society of London, to which, as principal executive officer, he has, of course, devoted most of his time. It is conceded by all that its affairs have prospered well under his direction. The number of Fellows of the Society, in 1859 about 1,700, has increased to over 3,000. The income of the Society, which in 1858 was a little over £14,000, is now seldom under £25,000. Besides this, nearly all of the principal buildings in the Society's gardens have been rebuilt during the past thirty-five years and fitted up with every sort of modern convenience for animals. The old office building (No. 11 Hanover square) has been sold and a larger and more convenient one (No. 3 Hanover square) bought in the same vicinity. A debt of £12,000 to the Society's bankers, originally secured upon its house, has been paid off, and this property is now the property of the Society without any sort of incumbrance.

The first floor of the Society's house is devoted to the accommodation of a large and very valuable zoological library, under the care of a librarian and his assistant, and is the constant resort of the working zoologists of the metropolis. This library has been almost entirely accumulated since 1859.

The publications of the Society, consisting of Proceedings, Transactions, Lists of Animals (of which eight editions have been published), the 'Garden Guide' and 'Zoological Record,' are all issued from this office, with almost unflinching regularity. The scientific meetings of the Society are held

here during the eight months of the scientific session, and an abstract of their proceedings is always printed and issued within a week after each meeting has taken place.

Mr. Sclater was selected by the British Ornithologists' Union as the first editor of *The Ibis*, in 1859. He finished the first series in 1864. Professor Newton took his place as editor of the second series, and Mr. Salvin as editor of the third. In 1877 he was associated with Mr. Salvin as joint editor of the fourth series, and in 1883 commenced the editorship of the fifth series, with Mr. Howard Saunders as coeditor. When the fifth series was completed, in 1888, he became sole editor of the sixth, which he finished in 1894. In 1895, having again obtained the assistance of Mr. Howard Saunders, he commenced work on the seventh series, of which two volumes are already complete.

When the British Ornithologists' Club was established, in 1892, he joined heartily in the movement inaugurated by Dr. R. Bowdler Sharpe, and has usually had the honor of occupying the chair at its meetings and of delivering an inaugural address at the commencement of each session.

With the British Association for the Advancement of Science he has had a long connection, having become a member in 1847 at the second Oxford meeting, and having attended its meetings with few exceptions ever since. For several years he was secretary of Section D, and at the Bristol meeting in 1875 he was president of that section and delivered an address 'On the Present State of our Knowledge of Geographical Zoology.' In 1876 he was elected one of the two general secretaries of the Association, together with Sir Douglas Galton, and served in that capacity for five years, thereby becoming an *ex officio* member of the Council, at the meetings of which he is a constant attendant.

Ever since the scientific journal *Nature*

was started by Professor Lockyer—in 1869—he has been a frequent contributor to that most important periodical.

In 1886 he began the transfer of his private collection of American bird skins to the British Museum. This collection contained 8,824 specimens, representing 3,158 species, belonging to the orders Passeres, Picariæ and Psittaci. It may be remarked that when he began his collection at Oxford, in 1847, he intended to collect birds of every kind and from all parts of the world, but after a few years resolved to confine his attention particularly to the ornithology of South and Central America and to collect only in the orders just mentioned, which were at that time generally less known than the others and of which the specimens are of a more manageable size for the private collector. At the time of the beginning of this transfer, which was only completed in 1890, he agreed to prepare some of the volumes of the British Museum 'Catalogue of Birds,' relating to the groups to which he had paid special attention. In accordance with this arrangement, by the expenditure of fully two years of his leisure time for each volume, he prepared the eleventh volume in 1886, the fourteenth in 1888, the fifteenth in 1890, and half of the nineteenth in 1891.

When the *Challenger* expedition started around the world, in 1873, at the request of his friend, the late Sir Wyville Thomson, he agreed to work out all the birds. Soon after the return of the expedition, in 1877, the specimens of birds collected were placed in his hands, and with the assistance of his ornithological friends were speedily reported upon in a series of papers contributed to the Zoological Society's 'Proceedings.' The whole of these papers were reprinted with additions and illustrations, and now form part of the second volume of the 'Zoology' of the *Challenger* expedition.

Geography, being very closely connected

with zoology, has always commanded Mr. Slater's hearty interest. He became a life member of the Royal Geographical Society in 1880, and has attended its meetings regularly ever since. He has also served two years on the Council, and is a member of the Geographical Club. He has assisted in promoting many researches in foreign parts, chiefly, however, with a view to obtaining collections of natural history from strange places. Among these may be especially mentioned Sir H. H. Johnston's expedition to Kilima-Njaro in 1884 and Professor Balfour's visit to Socotra in 1880. He also took a leading part in sending out naturalists to Kerguelens Land and Rodriguez, along with the transit-of-Venus expeditions of 1774-75, and in many other similar efforts to explore little-known parts of the earth's surface. At the present time he is serving on two committees of this kind—one for the investigation of the fauna and flora of the Lesser Antilles and the other for the further exploration of the fauna and flora of the Lesser Antilles and the other for the further exploration of the fauna of the Hawaiian Islands. In both of these countries collectors are actively at work.

In 1884 he took advantage of the opportunity of the visit of the British Association to Montreal to cross the Atlantic a second time, and after the meeting to visit the United States. He was not in good health at that period and did little, if anything, in the way of zoology. But he had the pleasure of seeing several of his former friends, especially Lawrence and Baird, and of making the personal acquaintance of Mr. Ridgway, Mr. Allen, Mr. Brewster, Dr. Merriam and many other naturalists.

In 1887, after a continuous residence of more than twenty-five years in London, he gave up his residence in Elvaston Place, where so many American naturalists visiting England have received a hearty wel-

come. He has since lived in Hampshire, at his country house, 'Odiham Priory,' about forty miles from town, taking a house for his family in London for three or four months at the beginning of each year. In summer he constantly visits the Continent, making excursions to see the various zoological gardens and museums.

One of his closest friends was the late Prof. Huxley, long a member of the Council of the Zoological Society, where he was one of Mr. Sclater's most constant supporters. Prof. Huxley, it may be said, was the chief advocate of the project of employing an anatomist at the Society's gardens, and invented the title 'prosector' for the new office. A. H. Garrod who became prosector in 1871, and W. A. Forbes, who succeeded him in 1879—both talented and promising young naturalists—were dear friends of Sclater, and the unfortunate death of Forbes during the excursion to the Niger in 1883 was a most severe blow to him. Notable among his other friends was Charles Darwin, who frequently visited him in his office, bringing long lists of memoranda for conference.

Mr. Sclater married, in 1862, Jane Anne Eliza Hunter Blair, daughter of the late Sir David Hunter Blair, baronet, of 'Blairquhan,' in Ayrshire. He has five children, of whom four are sons. The eldest, William Lutley Sclater, has inherited his father's tastes; he was for four years an assistant in the Indian Museum in Calcutta, and after a short term of service as science master at Eton College was appointed director of the South African Museum at Cape Town, a position which he now occupies.

The second son, Capt. Bertram Lutley Sclater, is an officer in the Royal Engineers, and is now on duty in British East Africa, constructing a road to Uganda from the coast.

The third son, Lieut. Guy Lutley Sclater, an officer in the Royal Navy, is a specialist

in torpedo work; while the youngest, Arthur Lutley Sclater, is a tea planter in Ceylon.

Mr. Sclater received the degree of doctor of philosophy, *honoris causa*, from the University of Bonn in 1860, and in 1861 was elected a fellow of the Royal Society, on the Council of which he has twice served.

At the age of sixty-seven he is still in full mental vigor, and adding each year a number of papers to his already remarkable list. May this useful career be continued for many years to come.

G. BROWN GOODE.

ON THE FLOATING OF METALS AND GLASS
ON WATER AND OTHER LIQUIDS.

DURING the progress of a research on the surface tension of liquids, and on the tension of films, I observed that rings of aluminum, made of wires of various diameters, floated on water when these rings were *chemically clean*. A ring 62 millimeters in diameter, made of aluminum rod 3.6 millimeters ($\frac{1}{4}$ inch) in thickness and weighing 5.6 grams floats on water; sometimes for several minutes, sometimes for several hours; the duration of flotation depending on conditions to be stated in a subsequent publication.

I naturally thought that these remarkable phenomena were peculiar to aluminum, because in all the works on physics I have read it is stated that to float a metal on water it is necessary that its surface should previously be greased. (See the latest treatise on physics, by Violle; Vol. I., pt. 2, p. 679.) I found, however, that all metals from platinum of a density of 22 to magnesium of a density of 1.7 float on water when their surfaces are chemically clean.

Rings were made of aluminum, iron, tin, copper, brass and German silver. The wire of these rings is one millimeter thick and the rings are about 50 millimeters in di-